A. Alternatives Dropped Prior to the Alternatives Public Workshop

The Harry W. Kelley Memorial Bridge is listed on the MD SHA's Historic Bridge Inventory and is eligible for inclusion in the National Register of Historic Places (NRHP). It is 1 of 9 movable bridges in Maryland that are eligible for the NRHP. Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. 303 (c)) permits the use of publicly owned land from any public park or recreation area, wildlife or waterfowl refuge, or historic site (as determined by the officials having jurisdiction over the park, recreation area, refuge, or site) only if there is no prudent or feasible alternative to the use of such land, and all possible planning has been undertaken to minimize harm to such park, recreation area, wildlife or waterfowl refuge, or significant historic sites resulting from this use.

Based on the feedback that MD SHA received from the public at the June 8 and 9, 2005 Open House Meetings, and subsequent project team meetings, an initial set of alternative concepts was developed for providing a crossing of the Sinepuxent Bay. The following general concepts were dropped from consideration prior to the Alternates Public Workshop.

South – Concepts in this group included alignments that would cross Sinepuxent Bay south of the existing bridge, tying into Ocean City at Wicomico Street or further south. Many of these options included one-way pairs, with the new bridge carrying inbound traffic and the existing (or another new) bridge carrying outbound traffic. Several of the alignments used Old Bridge Road or Sunset Avenue to access a new bridge from the west.

The South alignments were dropped from consideration due to potential impacts to commercial and residential properties in Ocean City and West Ocean City (residences are constructed within the former Old Bridge Road right-of-way), interference with boat clearances at local marinas, direct impacts to the Park and Ride facility in West Ocean City, potential impacts to the U.S. Coast Guard Station at Sunset Avenue, potential tidal wetland impacts, and impacts to Essential Fish Habitat (EFH) by potential dredging. Traffic impacts due to bringing the bridge traffic into Ocean City south of Wicomico Street was a primary concern with the South concepts as well.

North – Most of the North (Off-Alignment) concepts were dropped due to community and environmental impacts, and community opposition. One northern concept was presented at the Alternatives Public Workshop that provided a new bridge connecting into 9th Street in Ocean City despite the environmental and community concerns. Alternative 6 was presented to the public because it provided a direct connection into the two-way, 6-lane portion of Ocean Highway. This alternative would take traffic off of the two-way pair formed by Baltimore and Philadelphia Avenues south of 9th Street and would likely reduce congestion.

Other – These options included a variety of transportation solutions for crossing the bay including; tunneling, watertaxis, an aerial tram for pedestrians, and a double-decker bridge crossing. Initial concerns for the options included feasibility (i.e., the ability to accommodate the grades and space needed for tunneling and double-decking, or the currents that the watertaxi

would need to cross), impacts to Essential Fish Habitat (EFH), and the ability of the alternatives to meet the project purpose and need.

Based on MD SHA's review of the concepts and the public comments and suggestions, a list of reasonable alternatives to pursue for preparation of the Alternatives Workshop was developed. Concepts which directly impacted Skimmer Island were removed from consideration due to environmental concerns with impacts to the waterbird nesting habitat.

The watertaxi concept was dropped at this point as the currents in the Sinepuxent Bay would make navigation difficult and a channel to travel in difficult to maintain, with frequent dredging likely. The tunnel concept was also not chosen to carry forward as it resulted in increased property impacts, and would be difficult to bring back to grade given the limited space within Ocean City before reaching the ocean.

B. Alternatives Presented at the Alternates Public Workshop

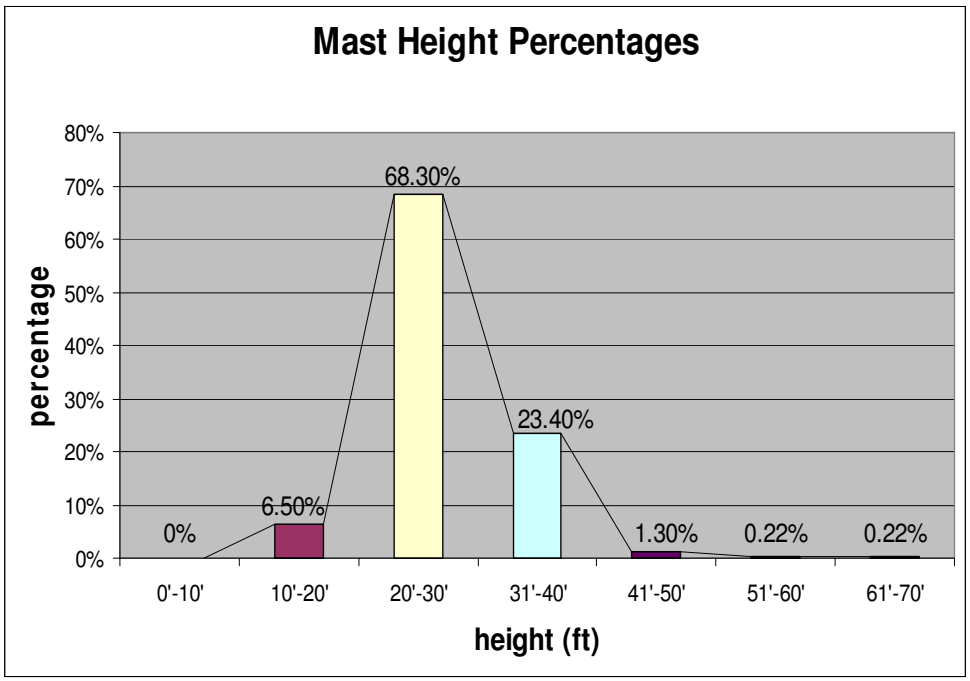
A total of 8 alternatives were developed to take to the Alternates Public Workshop in June, 2006. The alternatives presented were Alternative 1 (No-Build), Alternative 2 (Rehabilitation), Alternative 3 (One-Way Pair), Alternative 4 (1st Street Connection), Alternative 5 (South Parallel Bridge), Alternative 5a (North Parallel Bridge), Alternative 6 (9th Street Connection), and Alternative 7 (Remove and Replace). The following is a description of the alternatives presented at the Alternates Public Workshop.

Alternative 1 – No-Build - No major improvements are proposed under Alternative 1, the No-Build Alternative. Minor short term improvements would occur as part of routine maintenance and safety improvements. This alternative does not address the Purpose and Need for the project. However, it serves as a baseline for judging the impacts and benefits associated with the other alternatives.

Build Alternatives – Assumptions - Each of the build alternatives assume the existing channel would remain in its current location due to the environmental agencies' comments of the probable negative effects of moving it. The new structures in the alternatives are either a fixed span or a higher draw span. For the fixed span alternatives, the design was based on a bridge clearance height of 45 feet. The higher draw bridge alternatives were designed using a height of 30 feet. These heights were based on results from a mast height survey conducted for an entire year – from December 2004 to December 2005.

A mast height survey was conducted from December 2004 to December 2005. The mast heights of boats going under the US 50 Bridge were noted. Table II-1 shows the results of the survey. Based on the results of the survey the new bridge alternatives with bascule spans have a height of 30 feet. The number of boats needing bridge openings for Alternatives 5 and 5A is expected to decrease by approximately 75%.

Table II-1: Mast Heights



For all of the build alternatives, the emergency response time in the study area is expected to improve as a result of the implementation of the proposed project. The project has been and will continue to be coordinated with emergency services providers throughout the project planning process.

The environmental impacts analysis for all of the build alternatives considered potential impacts to wetlands based on direct (fill) impacts and indirect (shading) impacts (width to height ratios of greater than 1:1 are considered shading impacts). In addition, although none of the alternatives directly impact Skimmer Island, the proximity to Skimmer Island and the potential impacts to the birds and habitat were of utmost concern. All build alternatives are within the 1/4-mile bird protection zone (Alternative 6 is located to the north of Skimmer Island while the other build alternatives are located to the south).

Alternative 2 – Rehabilitation - This alternative included rehabilitation to the existing bridge with a pedestrian aerial tram servicing the park and ride transit lot just west of the bridge; a separate fishing pier for fishermen; wider sidewalks for pedestrians and cyclists; and additional aesthetic improvements such as lighting and archways.

The pedestrian aerial tram greatly added to the cost of this alternative. Rehabilitation of the bridge would extend its life by 30-40 years; however, it will not decrease the number of draw span openings. The rehabilitation would include major repairs to the piers and the draw span as well as resurfacing. This alternative also would not require taking any homes or businesses and would not impact any wetlands.

Alternative 3 - One-Way Pair - This alternative included a new, 3-lane bridge with a higher draw span for outbound traffic. The new structure would begin slightly west of the existing

bridge and connect near 2nd street in Ocean City. Traffic could either go outbound on the new structure or continue straight on MD 528 (Philadelphia Avenue) which is one-way south. The existing bridge would be used for inbound traffic only, and would be re-striped to have a total of 3 lanes with shoulders on both sides. To service the inbound traffic, major repairs would be done to the existing bridge to extend its life by 30-40 years. The higher draw span would help reduce bridge openings for the outbound traffic; however, the inbound traffic would still incur experience frequent openings of the existing draw bridge.

Alternative 4 - 1st Street Connection - This alternative included a new parallel bridge that begins slightly west of the existing bridge and connects near 1st Street in Ocean City (in the area of the concrete plant). The bridge would be a high-level fixed span with 6 lanes carrying both inbound and outbound traffic. The existing bridge would be retained and possibly used for bikes, pedestrians, and fishermen. The inbound traffic would continue onto MD 378, which is one-way northbound, and a new connection would be added to continue the inbound right-turn movement for heading southward into Ocean City.

Alternative 5 - South Parallel Bridge - This alternative included a new parallel bridge just south of US 50, tying back into Division Street. The bridge would have a higher draw span and carry inbound and outbound traffic with 6 lanes. The existing bridge would be retained and possibly used for bikes, pedestrians, and fishermen. The higher draw span would reduce the number of bridge openings.

Alternative 5A - North Parallel Bridge - This alternative included a new parallel bridge just north of US 50, tying back into Division Street. This is a mirror concept of Alternative 5. The bridge would have a higher draw span and carry inbound and outbound traffic with 6 lanes. The existing bridge would be retained and possibly used for bikes, pedestrians, and fishermen. The higher draw span would reduce the number of bridge openings.

Alternative 6 - 9th Street Connection - This alternative included a new bridge that begins west of MD 611 and connects to 9th Street in Ocean City (new alignment behind the White Marlin Mall). This would be a fixed span, 4-lane structure (a 4-lane section was considered appropriate for Alternative 6 based on the higher design speed and to keep construction costs in line with the other alternatives). The existing bridge would be retained and possibly used for bikes, transit, pedestrians, and fishermen. This alternative would take a majority of traffic away from the congested area south of 9th street and also is the farthest from Skimmer Island, which is an environmentally sensitive area. This alternative has the longest proposed bridge and is the most costly, even though it includes 4 lanes instead of 6.

Alternative 7 - Remove & Replace - This alternative included a new bridge that would replace the existing bridge. This new bridge would be at the current location of the existing bridge. The bridge would have a higher draw span and carry inbound and outbound traffic with 6 lanes. The higher draw span would reduce the number of bridge openings.

C. Alternatives Not Recommended for Detailed Study

Based on the review of the viability of these alternatives by the project team, consideration of input from the public at the Alternates Workshop, and comments received from the

environmental agencies, the following alternatives were not recommended for detailed study. The following summary provides reasons why the specific alternative was not recommended for detailed study **(Figures II-1, 2, and 3)**.

Alternative 3 - One-Way Pair – This alternative would still require the use of the existing bridge for inbound traffic and would still necessitate replacement of this bridge to accommodate vehicles in the future. Although this alternative would reduce the existing roadway section from the 4 lanes present today down to 3, providing more space for other users, the fishermen, pedestrians and bicyclists would still have to share the bridge with vehicular traffic. In addition, the existing bridge would still require significant repairs and eventual replacement since it would continue to carry vehicular traffic. Inbound traffic would also still have to contend with the frequent opening of the existing bridge draw span. This alternative was among the least popular with the public and has relatively heavy residential and commercial displacements. Due to the above considerations, Alternative 3 was not recommended for detail study.

Alternative 6 - 9th Street Connection - This is the most expensive option due to the length of the alignment, and requires the purchase of the most acres of right of way. Traffic would be routed to the north, bypassing many of the existing businesses and the park and right lot along US 50 west of the bay, and traffic patterns within Ocean City would be changed from today, requiring significant upgrade of the 9th Street intersections. This alternative would result in approximately 3.2 acres of impacts to tidal wetlands and would impact the expanded (100-foot) buffer of Elliott's Pond, a Wetland of Special State Concern. This was the most heavily opposed alternative by the public at the Alternatives Workshop due to impacts to the community, particularly west of the bay, and an adjacent school site. Due to the above considerations, Alternative 6 was not recommended for detail study.

The Maryland Department of Natural Resources (DNR) advocated the retention of Alternative 6 for the alternatives retained for detailed study (ARDS). DNR favored the optimization Alternative 6 provided in minimizing impacts to the sensitive colonial waterbird habitat on Skimmer Island. After additional coordination with MD SHA and a review of the potential resource impacts, engineering constraints, cost estimates, economic concerns, and public comments, DNR concurred with the MD SHA decision to drop Alternative 6 from the ARDS.

Alternative 7 - Remove & Replace - This alternative was dropped due to the need to remove the existing bridge, which is eligible for the National Register of Historic Places, to construct the new bridge in place. This would also present significant challenges for maintaining traffic during construction with the removal of the existing bridge in sections as the new bridge is constructed. The removal of the draw span in sections would also very be difficult to do from a construction standpoint. This alternative was also among the least popular with the public. Due to the above considerations, Alternative 7 was not recommended for detail study.

Figure II-1 Alt. 3 – One Way Pier

Figure II-2 Alt. 6 – 9th Street Connection

Figure II-3 Alt. 7 – Remove & Replace

D. Alternatives Recommended for Detailed Study

The following alternatives have been selected for detailed study. Many of the alternatives have been modified since the Alternates Public Workshop. It was determined that all alternatives would provide a total of 4 lanes of traffic. This decision for the 4-lane design was based on the fact that the Ocean City streets are limiting the traffic volumes, and could not support 3 lanes of inbound traffic. In addition, the Highway Needs Inventory has US 50 listed as a 4-lane highway. The other modifications since the Alternates Public Workshop are discussed for each retained alternative. In general, the typical section for all build alternatives (except Alternative 2) will provide four 12-foot lanes of traffic, a 6-foot median, two 7-foot shoulders, two 5-foot 8 inch sidewalks and two 2-foot parapets for a total out-to-out width of 87 feet 4 inches (**Figure II-4**).

Regulatory and review agencies concurred with this recommendation as part of the environmental streamlined process. The concurrence is included in **Section V**. Detailed mapping of the alternatives retained for detailed study is included as **Figure II-5** through **Figure II-8**.

Alternative 1 – No-Build - No major improvements are proposed under Alternative 1, the No-Build Alternative. Minor short term improvements would occur as part of routine maintenance and safety improvements. This alternative does not address the Purpose and Need for the project. However, it serves as a baseline for judging the impacts and benefits associated with the other alternatives.

Alternative 2 – Rehabilitation - This alternative involves rehabilitation to the existing bridge with the addition of a separate fishing pier for fishermen, wider sidewalks for pedestrians and cyclists, and adding aesthetics such as lighting and archways. This alternative received support from approximately half of the people commenting on the project from the Alternates Public Workshop. It would not replace the existing structure, but it would add 30-40 more years of life expectancy to the bridge structure. The initial concept of providing an aerial tram for pedestrians was removed from this alternative after the Alternates Public Workshop due to lack of public interest and high cost.

Alternative 4 Modified - Fixed Span Bridge – Alternative 4 was presented at the Alternates Public Workshop as the "1st Street Connection", but has since been re-named because the alternative no longer connects to 1st Street, instead it connects into Philadelphia and Baltimore Avenues. This alternative was modified after the Alternates Public Workshop to minimize impacts to homes and businesses. The modifications include a new slightly curved bridge to the north of the existing bridge that connects into Philadelphia Avenue (one-way southbound) and Baltimore Avenue (one-way northbound). The bridge enters Ocean City north of the existing bridge, slightly above 1st Street.

The bridge would be a 45 foot high fixed span with 4 lanes carrying both inbound and outbound traffic. The existing bridge would be retained and possibly used for bikes, pedestrians, and fishermen. The inbound traffic would continue northbound one-way onto Baltimore Avenue (MD 378), and a new connection would be added onto Philadelphia Avenue to continue the

inbound right-turn movement for traffic heading southward into Ocean City. This alternative would require longer ramps into Ocean City due to the height needed for a fixed span.

This alternative received support from the majority of participants at the Alternates Public Workshop. It would eliminate the need for draw span openings and would provide a separate facility for pedestrians, bicyclists, and fishermen on the existing bridge. While it would have significant right of way impacts in Ocean City, it would provide direct connections from the bridge to Baltimore and Philadelphia Avenues.

No major improvements are proposed for the existing bridge. Minor short term improvements would occur as part of routine maintenance and safety improvements.

Alternative 5 - South Parallel Bridge - This alternative includes a new parallel bridge just south of US 50, tying back into Division Street on the Ocean City side. The bridge would have a higher draw span and carry inbound and outbound traffic with 4 lanes. The higher draw span is expected to reduce the number of bridge openings. This alternative received considerable support from the public at the Alternates Public Workshop, has relatively low right of way and environmental impacts, and provides a separate facility for pedestrians, bicyclists, and fishermen on the existing bridge.

This alternative presents challenges at the western tie-in to US 50. In West Ocean City, a new waterfront townhouse development, the Villas at Inlet Isle, is located adjacent to Alternative 5. A retaining wall has been included to this alternative to minimize impacts. None of the homes are physically impacted. The residences in this development have boat slips behind the homes which access the Sinepuxent Bay. Currently, boat slips at the Villas at Inlet Isle have access for all boats to the bay. Under Alternative 5, there will be approximately 17 feet of vertical clearance over the entrance to the lagoon for boat slips. As a result, only boats under 17 feet in height would have access to the bay. During construction, access to some homes at the east end of the development maybe impacted.

No major improvements are proposed for the existing bridge. Minor short term improvements would occur as part of routine maintenance and safety improvements.

Alternative 5A - North Parallel Bridge - This alternative includes a new parallel bridge just north of US 50, tying back into Division Street. This is a mirror concept of Alternative 5. The bridge would have a higher draw span and carry inbound and outbound traffic with 4 lanes. The existing bridge would be retained and possibly used for bikes, pedestrians, and fishermen. The higher draw span is expected to reduce the number of bridge openings. This alternative received considerable support from the public at the Workshop, has relatively low right of way and environmental impacts, and provides a separate facility for pedestrians, bicyclists, and fishermen on the existing bridge.

No major improvements are proposed for the existing bridge. Minor short term improvements would occur as part of routine maintenance and safety improvements.

Figure II-4. Typical Section

Fig II-5: Alternative 2

Fig II-6: Alternative 4 Modified

Fig II-7: Alternative 5

Fig II-8: Alternative 5A

E. Cost Comparison

Construction and Preliminary Right-of-Way Costs

Table II-2 provides the estimated construction costs and preliminary right-of-way (ROW) costs for each of the proposed alternatives retained for detailed study.

Table II-2: Cost Estimates

	Alt. 1 (No-Build)	Alt. 2	Alt. 4 Modified	Alt. 5	Alt. 5A
Construction Cost	0	$107M	$184M	$222M	$222M
Right-of-Way Cost	0	0	$156M	$67M	$46M
Total	0	$107M	$340M	$289M	$268M

***The cost estimates include costs associated with maintenance and general upkeep. These costs are the same for all of the alternatives**

F. Bicycle, Pedestrian and Fishermen Accommodation

As part of the project Purpose and Need, the safety of pedestrian, bicyclists and the recreational needs of fishermen are considered for each of the alternatives. Alternatives 4 Modified, 5 and 5A include the retention of the existing bridge for use by pedestrians, bicyclists and fishermen. In addition, the proposed bridge structures will include two 5 foot 8 inch sidewalks to accommodate pedestrians and bicyclists, especially in the event that the existing bridge, particularly the draw span, becomes unusable. It is anticipated that fishermen will continue to utilize the existing bridge even if the draw span becomes inoperable. Alternative 2 provides a separate pier for fishermen, thereby providing better access for pedestrians and bicyclists using the sidewalks.